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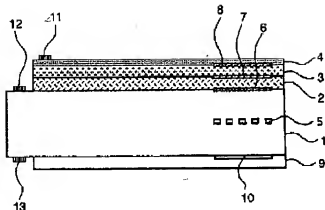
APPLICATION DATE : 28-06-99
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APPLICANT : HITACHI LTD;

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TITLE : AIR-FUEL RATIO SENSOR



ABSTRACT : PROBLEM TO BE SOLVED: To start an action in a short time after tuning on a power source and to carry out highly precise heating and controlling easily by bringing a heater unit and a detection unit close to each other and controlling heating for keeping a temperature around the detection unit at a fixed value.

SOLUTION: On a green sheet type ceramic base board 1, a pattern of a heater 5 made of platinum material is printed, and on the heater pattern, a ceramic base board 1' is layered. A platinum-base oxygen reference electrode 6 is printed on the surface of the base board 1, and a dense zirconia solid electrolyte 2 is layered on the reference electrode 6. Subsequently, a negative electrode 7, a porous zirconia solid electrolyte 3, a positive electrode 8, and a porous protection film 4 are layered sequentially. On the other hand, a temperature sensor 10 made of platinum material is printed on the other face of the base board 1, and a ceramic member 9 made of alumina is layer of the surface of the temperature sensor 10, and after thermocompression bonding, sintering is carried out at a high temperature for forming them into a porous substance. As no hollow chamber is formed between the heater 5 and the detection unit in this case, a temperature inclination between them is reduced, so that no crack due to thermal stress is caused in the detection unit or in the base board 1 even if heavy power is supplied.

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